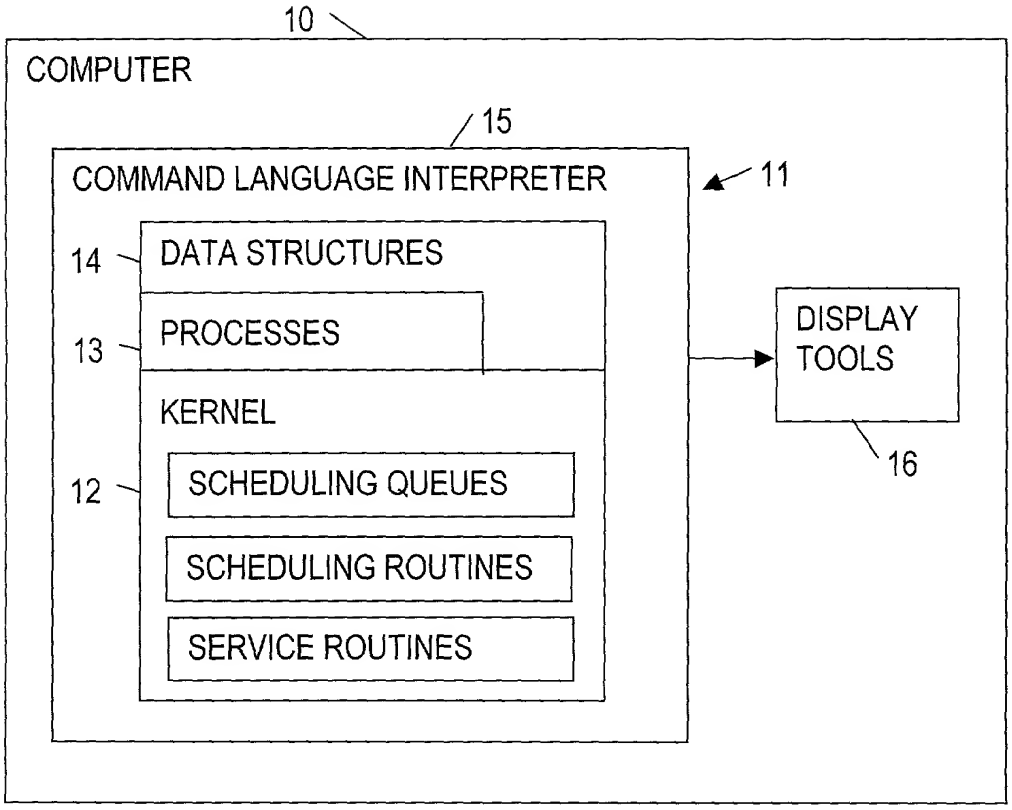

10
COMPUTER
15
COMMAND LANGUAGE INTERPRETER
11
14
DATA STRUCTURES
13
PROCESSES
KERNEL
12
SCHEDULING QUEUES
SCHEDULING ROUTINES
SERVICE ROUTINES
DISPLAY TOOLS
16

FIG.1

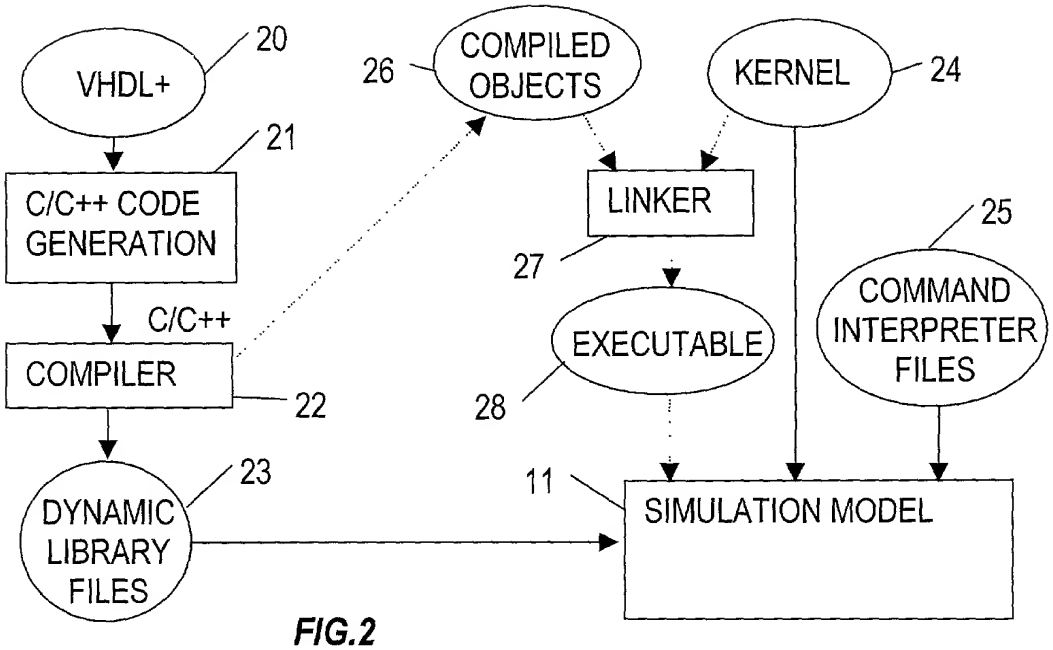

VHDL+
20
26
COMPILED OBJECTS
KERNEL
24
21
C/C++ CODE GENERATION
LINKER
25
27
C/C++
COMPILER
22
EXECUTABLE
COMMAND INTERPRETER FILES
28
23
11
DYNAMIC LIBRARY FILES
SIMULATION MODEL

FIG.2

FIG.3

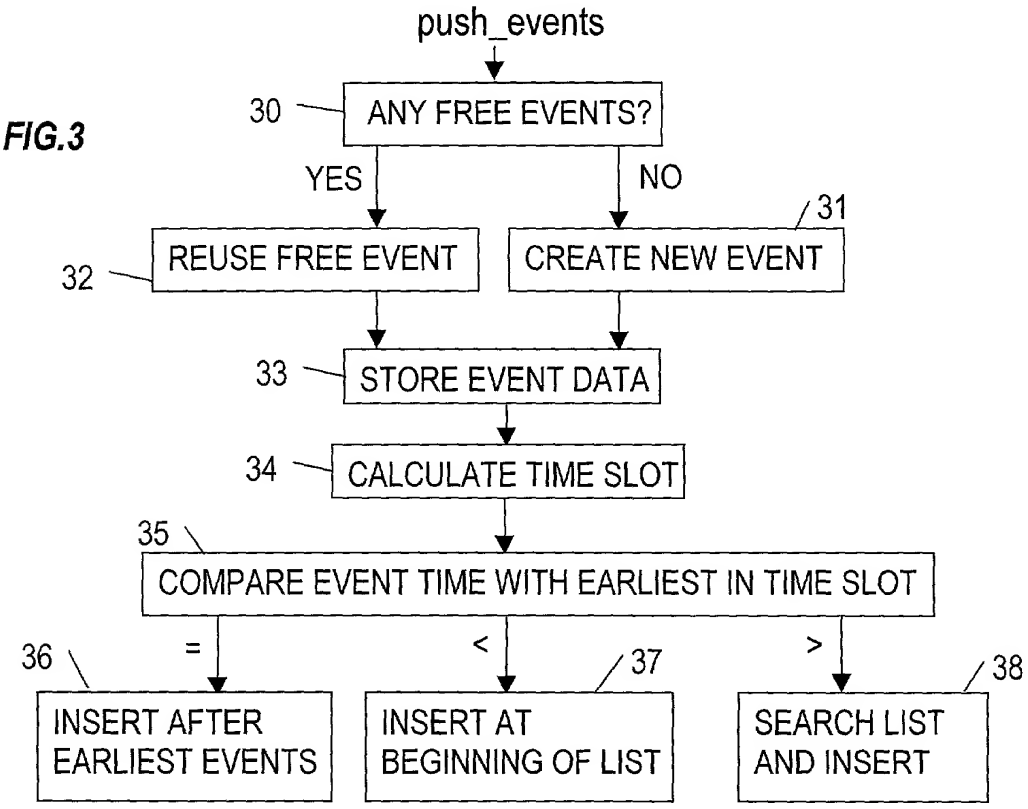

push_events
30
ANY FREE EVENTS?
YES
NO
31
32
REUSE FREE EVENT
CREATE NEW EVENT
33
STORE EVENT DATA
34
CALCULATE TIME SLOT
35
COMPARE EVENT TIME WITH EARLIEST IN TIME SLOT
=
<
>
36
37
38
INSERT AFTER EARLIEST EVENTS
INSERT AT BEGINNING OF LIST
SEARCH LIST AND INSERT

FIG.4

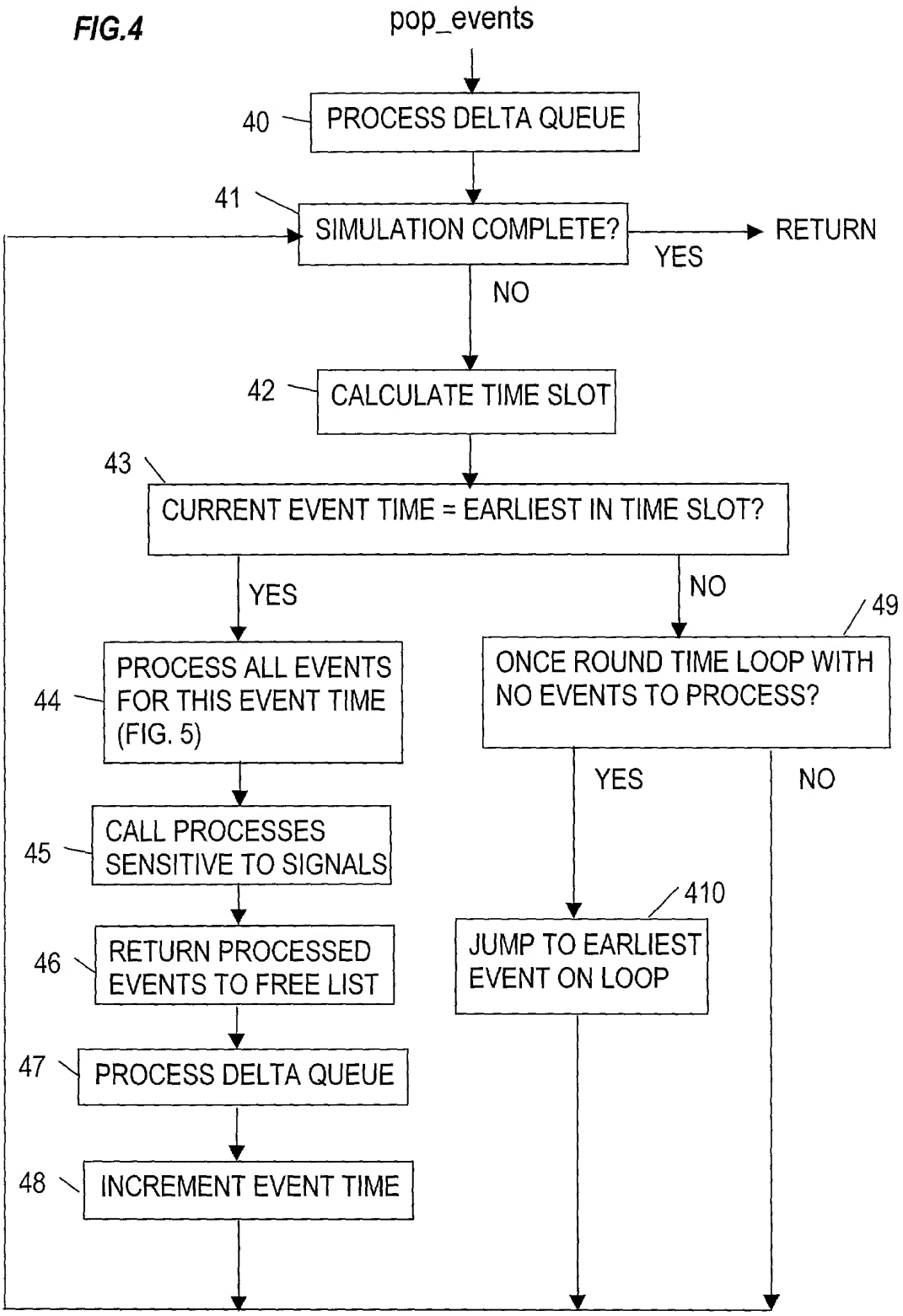

pop_events
40
PROCESS DELTA QUEUE
41
SIMULATION COMPLETE?
YES
RETURN
NO
42
CALCULATE TIME SLOT
43
CURRENT EVENT TIME = EARLIEST IN TIME SLOT?
YES
NO
49
44
PROCESS ALL EVENTS FOR THIS EVENT TIME (FIG. 5)
ONCE ROUND TIME LOOP WITH NO EVENTS TO PROCESS?
YES
NO
45
CALL PROCESSES SENSITIVE TO SIGNALS
410
46
RETURN PROCESSED EVENTS TO FREE LIST
JUMP TO EARLIEST EVENT ON LOOP
47
PROCESS DELTA QUEUE
48
INCREMENT EVENT TIME

FIG.5

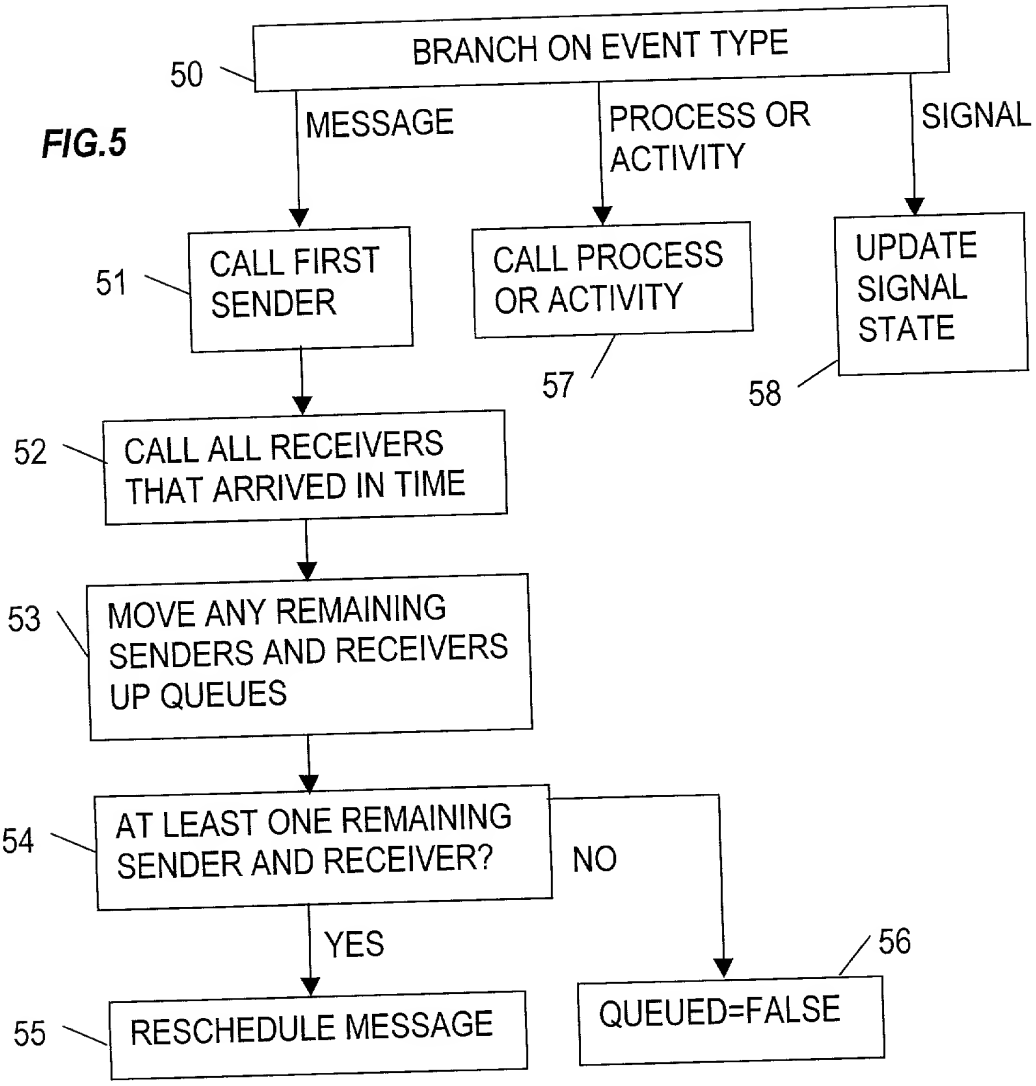

BRANCH ON EVENT TYPE
50
MESSAGE
PROCESS OR ACTIVITY
SIGNAL
CALL FIRST SENDER
51
CALL PROCESS OR ACTIVITY
57
UPDATE SIGNAL STATE
58
CALL ALL RECEIVERS THAT ARRIVED IN TIME
52
MOVE ANY REMAINING SENDERS AND RECEIVERS UP QUEUES
53
AT LEAST ONE REMAINING SENDER AND RECEIVER?
54
NO
YES
56
QUEUED=FALSE
RESCHEDULE MESSAGE
55

FIG.6

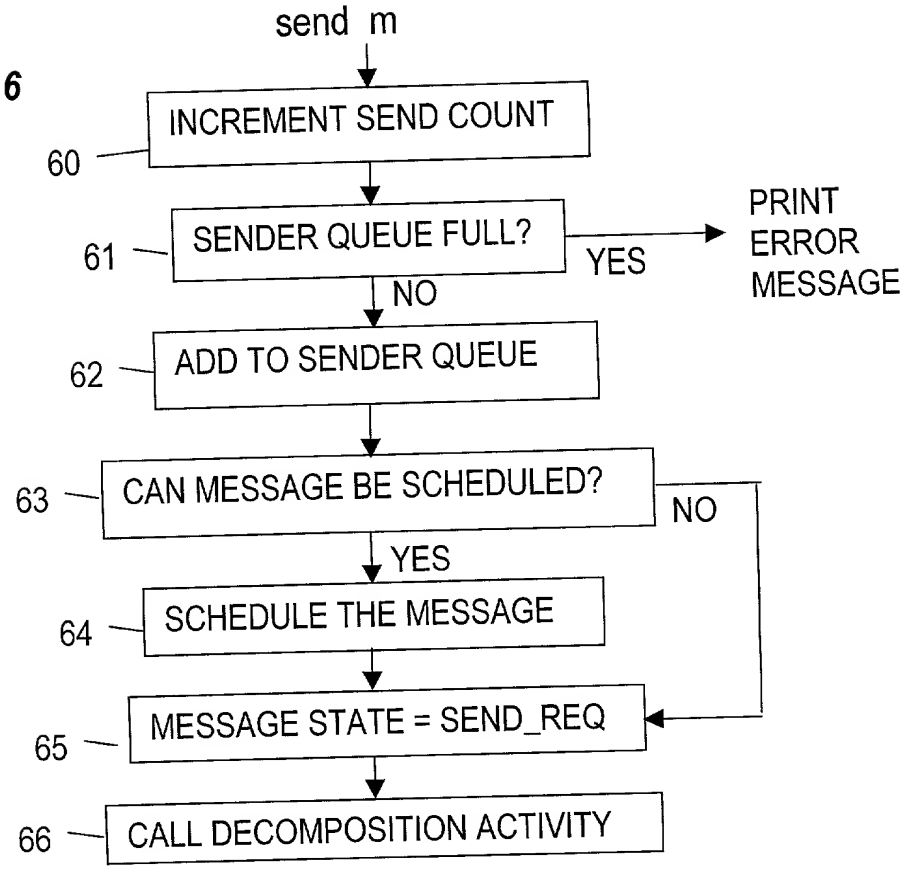

send m
INCREMENT SEND COUNT
60
SENDER QUEUE FULL?
61
YES
PRINT ERROR MESSAGE
NO
ADD TO SENDER QUEUE
62
CAN MESSAGE BE SCHEDULED?
63
NO
YES
SCHEDULE THE MESSAGE
64
MESSAGE STATE = SEND_REQ
65
CALL DECOMPOSITION ACTIVITY
66

FIG.7

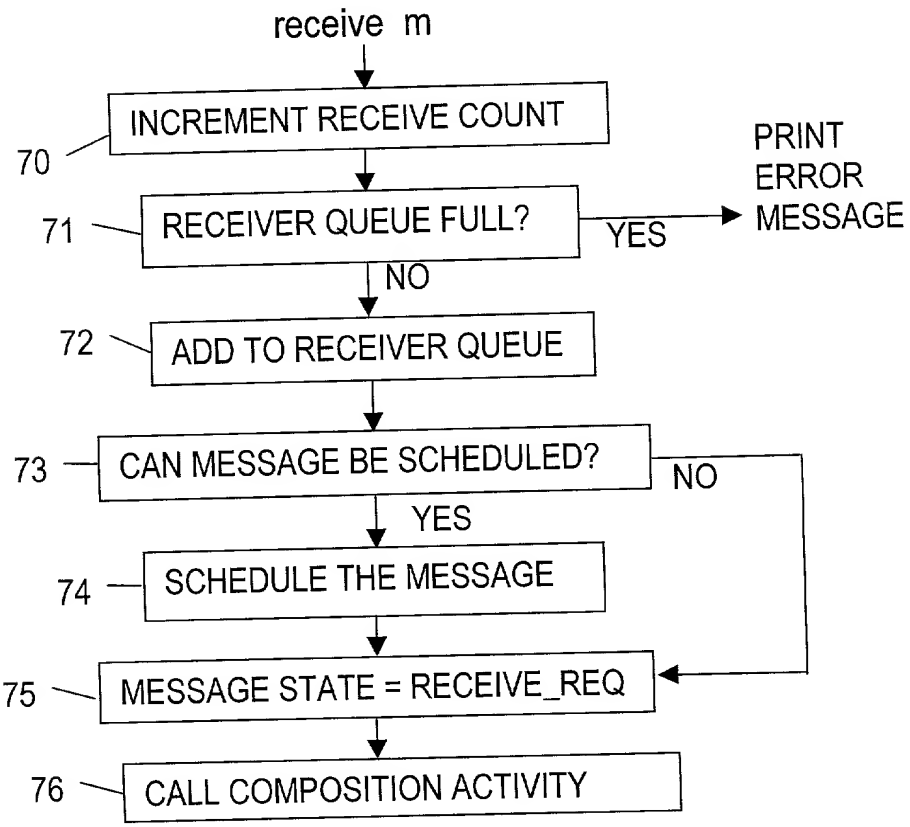

receive m
INCREMENT RECEIVE COUNT
70
RECEIVER QUEUE FULL?
71
YES
PRINT ERROR MESSAGE
NO
ADD TO RECEIVER QUEUE
72
CAN MESSAGE BE SCHEDULED?
73
NO
YES
SCHEDULE THE MESSAGE
74
MESSAGE STATE = RECEIVE_REQ
75
CALL COMPOSITION ACTIVITY
76

FIG.8

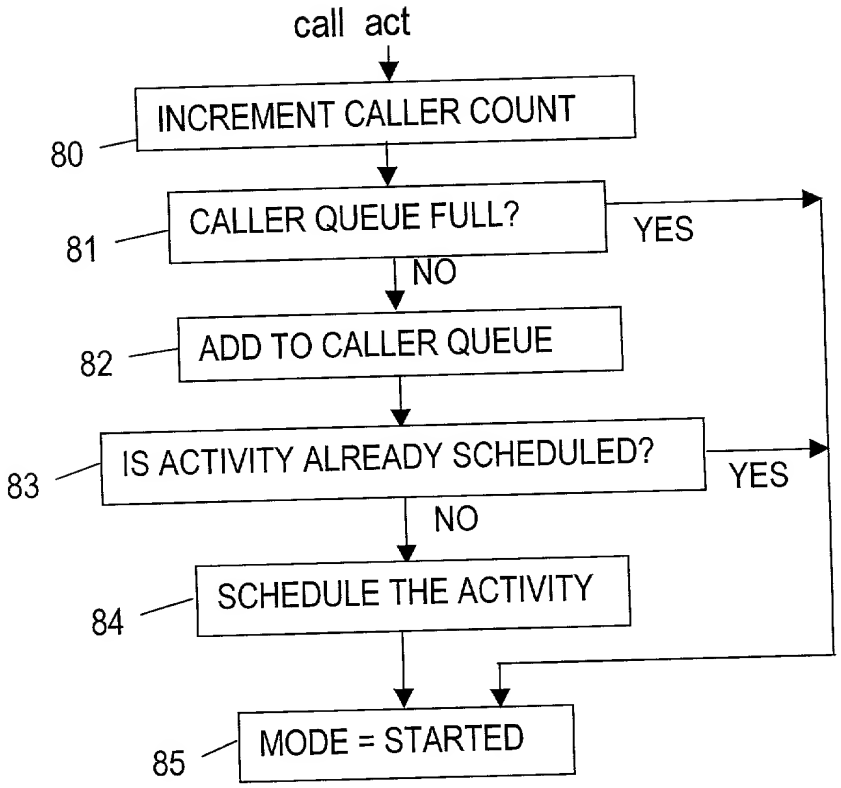

call act
INCREMENT CALLER COUNT
80
CALLER QUEUE FULL?
81
YES
NO
ADD TO CALLER QUEUE
82
IS ACTIVITY ALREADY SCHEDULED?
83
YES
NO
SCHEDULE THE ACTIVITY
84
MODE = STARTED
85

FIG.9

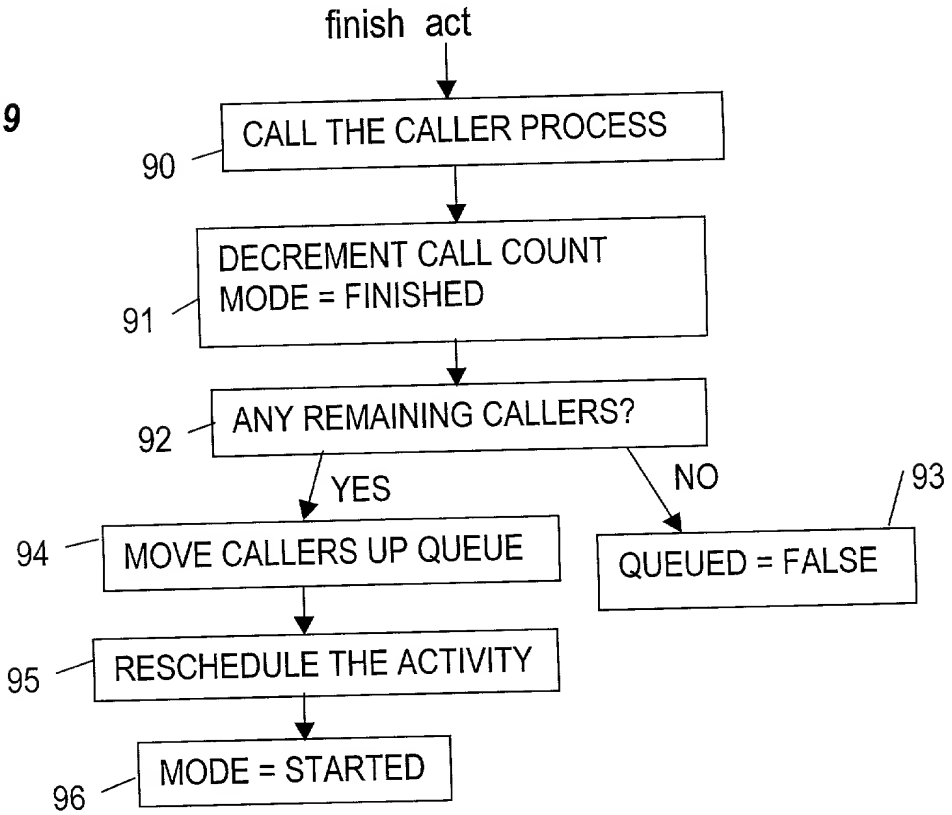

finish act
CALL THE CALLER PROCESS
90
DECREMENT CALL COUNT
MODE = FINISHED
91
ANY REMAINING CALLERS?
92
YES
NO
93
MOVE CALLERS UP QUEUE
94
QUEUED = FALSE
RESCHEDULE THE ACTIVITY
95
MODE = STARTED
96

FIG.10

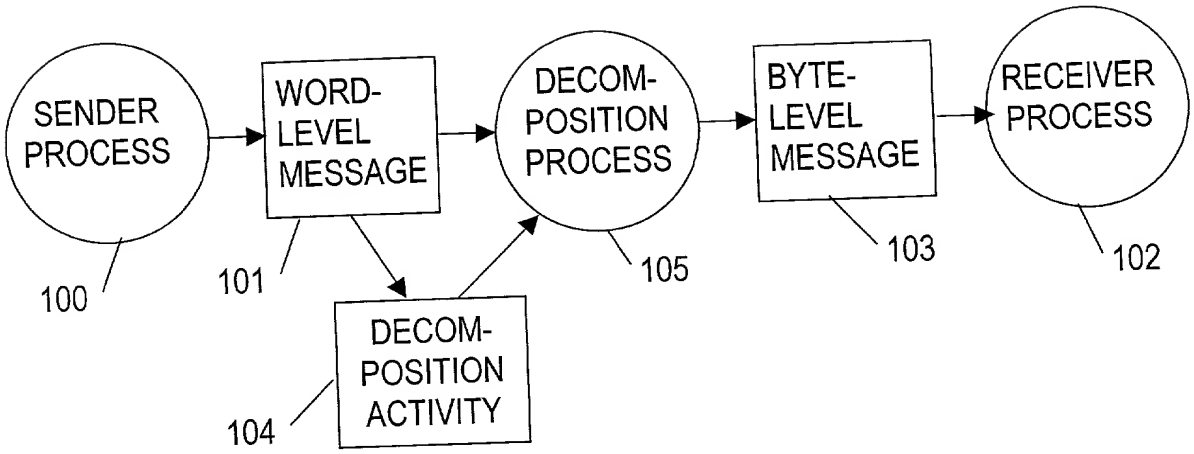
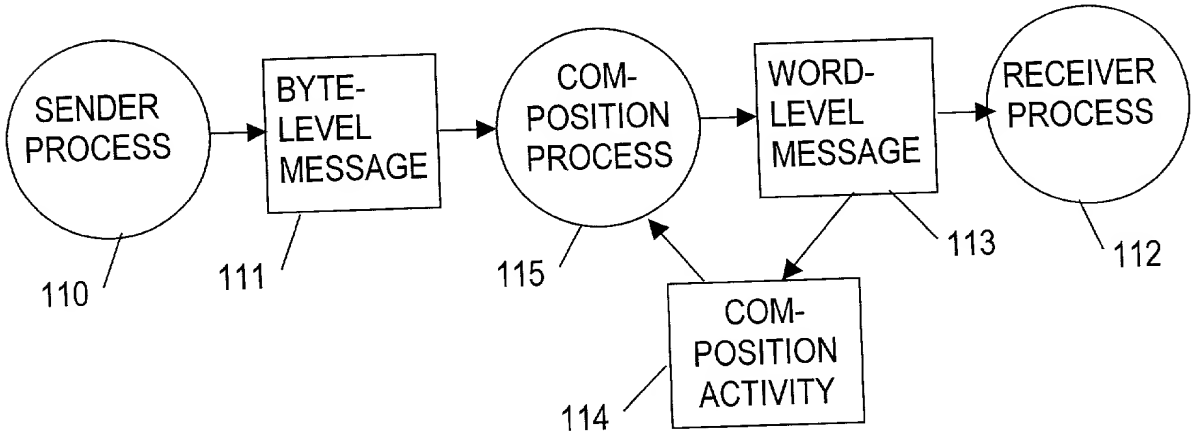

SENDER PROCESS
WORD-LEVEL MESSAGE
DECOM-POSITION PROCESS
BYTE-LEVEL MESSAGE
RECEIVER PROCESS
DECOM-POSITION ACTIVITY
100
101
102
103
104
105

FIG.11


SENDER PROCESS
BYTE-LEVEL MESSAGE
COM-POSITION PROCESS
WORD-LEVEL MESSAGE
RECEIVER PROCESS
COM-POSITION ACTIVITY
110
111
112
113
114
115